

# EUROPEAN PATENT OFFICE

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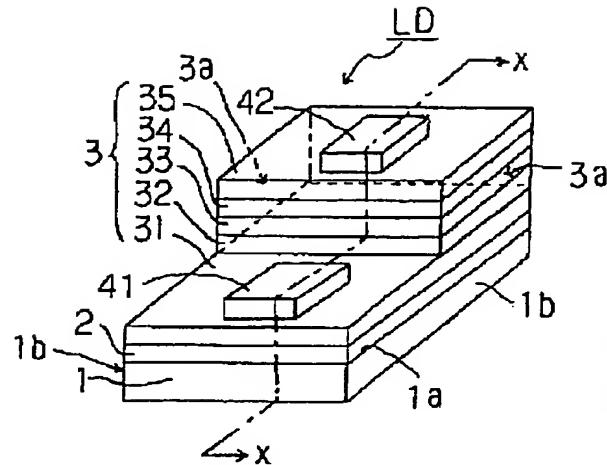
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APPLICANT : KYOCERA CORP;

INVENTOR : INOUE SHINJI;

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TITLE : SUBSTRATE FOR GROWING THIN LAYER AND Emitter USING THE SAME



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**ABSTRACT :** PROBLEM TO BE SOLVED: To provide an inexpensive and excellent substrate for growing thin layer that can stably produce magnesia spinel of high quality by not increasing, but rather lowering the crystal growth temperature for magnesia spinel, in addition, suitably permits the crystal growth from vapor phase such as epitaxial growth of gallium nitride and provide an emitter using the same.

**SOLUTION:** This substrate for growing thin layer comprises magnesia spinel single crystal including a transition metal element and is used for growing semiconductor thin layer (single crystal) mainly containing gallium nitride. In an embodiment, this magnesia spinel single crystal contains 0.1-5.0 wt.% of TiO<sub>2</sub> or MnO. The objective light-emitting device (LD) is prepared by arranging a laser element 3 having the semiconductor thin layers 31-35 at least containing gallium nitride on the substrate for growing thin layers thereon.

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